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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/942,995	08/31/2001	Kazuyoshi Tokunaga	Q66033	9298

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EXAMINER

MURPHY, DILLON J

ART UNIT PAPER NUMBER

2624

DATE MAILED: 06/02/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/942,995

Applicant(s)

TOKUNAGA ET AL.

Examiner

Dillon J. Murphy

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 31 August 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-17 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-17 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 31 August 2001 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☒ Other: Detailed Action

DETAILED ACTION***Drawings***

The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they do not include the following reference sign(s) mentioned in the description: spool readout part number 2120 described on page 20, line 12 of the specification. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Specification

The disclosure is objected to because of the following informalities: the name of the pattern decoder part, part number 44, should correspond to the name in Figure 6, the quotation mark on line 4 of page 17 should be removed, and part number 221-a should be changed to 2211-a on page 22, line 5.

Appropriate correction is required.

Claim Objections

Claim 1 is objected to because of the following informalities: the phrase "recording a digital image on a blank on a sheet of paper" should be changed to "recording a digital image on a blank sheet of paper." Appropriate correction is required.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 8 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The phrase "image density is 0.1" in claim 8 is a relative term which renders the claim indefinite. The phrase "image density is 0.1" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention. Although an attempt is made in the specification to explain the spacing of pixels, further clarification is required as to what the appropriate units are.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this

Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1 - 5, 8, 13 and 14 are rejected under 35 U.S.C. 102(b) as being anticipated by Gasper et al. (U.S. 5,919,730), hereafter referred to as Gasper.

With regard to claim 1, Gasper teaches an invisible information recording method comprising:

Recording a digital image (Figure 1, #12, digital image on paper) on a blank sheet of paper; and

Recording information in the form of pixels so sized as to be invisible to a naked eye and at a print density invisible to the naked eye (Figure 1a, #16, microdot).

With regard to claim 2, which depends from claim 1, Gasper further teaches a method wherein each of the pixels so sized as to be invisible to the naked eye is 75 micrometers or less in diameter (preferred size of Gasper to be between 10 and 300 microns, column 6, lines 55-59).

With regard to claim 3, which depends from claim 2, Gasper teaches further that each of the pixels so sized as to be invisible to the naked eye corresponds to one or a plurality of image forming elements used for a device for

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forming a digital image (invisible pixels corresponding to one or a plurality of image forming elements used for a device for forming a digital image, Figure 1, and Figure 1A, microdots correspond to digital images).

With regard to claim 4, which depends from claim 1, Gasper teaches each of the pixels so sized as to be invisible to the naked eye is printed using a yellow color developer (Gasper, col 7, ln 61-66, preferred color of pixels to be yellow in color).

With regard to claim 5, Gasper teaches the yellow color developer is formed of ink or toner (col 9, ln 19-21).

With regard to claim 8, which depends from claim 2, Gasper teaches a method wherein a print density invisible to the naked eye is such that the pixels each so sized as to be invisible to the naked eye are coarsely distributed (Gasper, col 7, ln 6-8, spacing of the image forming elements to be 1.0 mm).

With regard to claim 13, which depends from claim 1, Gasper teaches a method wherein such information formed by coarsely distributing the pixels each so sized as to be invisible to the naked eye so as to have a print density invisible to the naked eye is recorded into a plurality of locations on one page of a digital image (column 6, lines 5-7).

With regard to claim 14, Gasper teaches a recording apparatus for recording invisible information on a sheet of paper according to any one of claims 1 to 11 (teaches a recording device for recording the information on a sheet of paper, column 8, lines 53-58, and Figure 2 showing a scanner (22), a digital

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image processing unit (24) comprising of a keyboard (26) and monitor (28), and a printer (30) to form hard copy prints).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 6 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gasper et al. (U.S. 5,919,730) and Yano et al. (U.S. 6,035,308), hereafter referred to as Gasper and Yano.

Regarding claim 6, which depends from claim 1, and claim 7, which depends from claim 6, Gasper teaches a method of recording a digital image on a blank sheet of paper and incorporating information in the form of pixels sized to be invisible to the naked eye. Gasper fails to teach the use of an ultraviolet color rays developer, ink or toner. Regarding claim 6, Yano teaches the embedding of information in a document using an ultraviolet color rays developer, and regarding claim 7, Yano teaches the specific use of ink or toner (Yano, col 33, In 53-63).

Gasper and Yano are combinable because they are from the same field of endeavor of printing and embedding information on a page and linking the embedded information. It would have been obvious to one of ordinary skill in the

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art at the time of the invention to modify Gasper to include the use of an ultraviolet color rays developer, ink or toner as suggested by Yano in order to increase the quantity of information stored within a document without restriction due to character size, or without displeasing the reader (Yano, col 3, ln 39-44). Therefore, it would have been obvious to combine Gasper with Yano to obtain the invention as specified in claims 6 and 7.

Claims 9, 10, and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gasper et al. (U.S. 5,919,730) and Cass et al. (U.S. 5,946,414), hereafter referred to as Gasper and Cass. As previously mentioned, Gasper teaches a method of recording a digital image on a blank sheet of paper and incorporating information in the form of pixels sized to be invisible to the naked eye. Also, Gasper teaches the arrangement of the microdots into a pattern or array (Gasper, col 6, ln 60-67), but does not disclose the specific details of the grouping.

With regard to claim 9, Gasper fails to teach an invisible information recording method where 16 image-forming elements is a recording unit. In the information recording method taught by Cass, "signal blocks," i.e. "recording units," are used as the base of encoding information. The "signal blocks" of Cass consist of a varying number of "color cells," consisting of "printer cells," i.e. pixels, which are the smallest unit of the absence or presence of a mark on a printed medium (Cass, col 14, ln 59-63). Choosing K, the number of "color cells" in a "signal block", equal to 1, defines a "signal block" consisting of 16 "printer cells." Thus the "signal block" with one "color cell" (Cass, Figure 48, #344) is

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formed with 16 "printer cells" (Cass, Figure 48, #342). In this manner the method of forming "signal blocks" is identical to forming "recording units."

With regard to claim 10, which depends from claim 9, Cass teaches a method of pattern-based encoding, where "signal blocks," i.e. recording units, can stand alone or they can be further grouped together to express a message in a "message image" (Cass, Figure 14, #675). In one embodiment, Cass uses a 1-Dimensional array to encode a message (Cass, col 18, ln 62-64). The message of Cass is not limited in length, and may have a length of six units (Cass, col 15, ln 40-49). Thus, a "message image," i.e. a "significant block," consists of six "signal blocks," i.e. "recording units." In this manner the method of forming a "message image" is identical to forming a "significant block."

With regard to claim 11, which depends from claim 10, Cass teaches the encoding of "signal blocks," i.e. "recording unit," to represent "1" in a "message image," i.e. a "significant block" (column 18, lines 60-62).

Gaspar and Cass are combinable because they are from a similar problem solving area of encoding information on a media in a manner that is invisible to the naked eye. It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the patterned and rectangular arrangement of microdots in Gaspar to include the specific use of the "recording unit" and "significant block," and to use "recording units" to represent a "1" in a "significant block" to reliably encode information at a high density rate in an image (Cass, column 6, lines 42-44). The motivation for doing so would have been to encode information in a document to provide each document with a

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unique "signature" to distinguish one document from others (Gasper, col 8, ln 15-18). Therefore, it would have been obvious to combine Gasper with Cass to obtain the invention as specified in claims 9, 10, and 11.

Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Gasper et al. (U.S. 5,919,730) and Cass et al. (U.S. 5,946,414) as applied to claims 9, 10, and 11 above, and further in view of Hayashi et al. (US 2003/0161496 A1), hereafter referred to as Gasper, Cass, and Hayashi.

Regarding claim 12, which depends from claim 10, Gasper teaches a method of recording a digital image on a blank sheet of paper and incorporating information in the form of pixels sized to be invisible to the naked eye while failing to explicitly teach a structure of recording units and significant blocks, a method where a recording unit represents a "1," and a method wherein a recording unit is representative of a parity check.

Cass teaches the method of using the recording unit and significant block structure while also disclosing the encoding of a "1" in a recording unit, but fails to explicitly teach the method of a parity check. Hayashi teaches the method using parity bits in an embedded digital watermark (page 9, paragraph #219).

Hayashi teaches an arrangement of the grid based encoded information with parity check (Figure 21B). Hayashi also teaches parity bits, P1-P16, embedded in the digital watermark for error correction (Figure 21B).

Gasper, Cass, and Hayashi are combinable because they are from a similar problem solving area of printing and encoding information reliably as watermarks or pixels on a paper. At the time of invention, it would have been

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obvious to one of ordinary skill in the art to modify Gasper to include the use of the recording unit and significant block, and to use recording units to represent a "1" to reliably encode information at a high density rate in an image, as suggested by Cass, and to provide each document with a unique signature as suggested by Gasper. Furthermore, it would have been obvious to combine the parity check as suggested by Hayashi to the aforementioned combination of Gasper and Cass to provide a digital watermark which does not degrade the image quality of the original image, is superiorly robust against attacks, and can embed a large amount of information (Hayashi, page 1, paragraphs 10-13). The suggestion for doing so was given by Cass, in col 15, ln 44-46, which teaches that message data may include error correction codes and any other such data as might be needed to facilitate decoding, such as a parity bit. Therefore, it would have been obvious to combine Gasper and Cass with Hayashi to obtain the invention as specified in claim 13.

Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Boswell (U.S. 5,559,933) and Gasper et al. (U.S. 5,919,730), hereafter referred to as Boswell and Gasper.

Regarding claim 15, Boswell teaches an archiving printer capable of printing a document and storing and reprinting the document as document data in an archive (column 5, lines 1-4). The printing system taught by Boswell further teaches a recording section for recording archive management information on a document (column 5, lines 13-22). Boswell also teaches a knowing section for knowing the archive management information on the printed document (column

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25, lines 34-42). Boswell does not teach a method of printing information in a state that is invisible to the human eye, and furthermore, Boswell does not teach a reading section for reading out the information being recorded in an invisible manner. Gasper teaches a method of recording information invisible to the human eye in a document (column 3, lines 51-56). Gasper also teaches a reading section capable of reading the invisible information being recorded (Figure 2 of Gasper, showing a scanner (22), a digital image processing unit (24) comprising of a keyboard (26) and monitor (28), and a printer (30) to form hard copy prints, also column 5, lines 31-46).

Boswell and Gasper are combinable because they are from the same field of endeavor, namely printing systems and archiving information for reprinting. At the time of invention, it would have been obvious to a person of ordinary skill in the art to record the archive management information taught by Boswell in the invisible manner taught by Gasper, as well as to include a reading section from Gasper to read the information recorded in the invisible manner. The motivation for doing so would have been to control when, where, and how print files are to be printed (Boswell, column 4, lines 26-28), as well as to maintain the high quality and utility of the document (Gasper, column 3, lines 59-62). Therefore, it would have been obvious to combine Gasper with Boswell to obtain the invention as specified in claim 15.

Claims 16 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Boswell (U.S. 5,559,933) and Gasper et al. (U.S. 5,919,730), hereafter referred to as Boswell and Gasper. As previously mentioned, Boswell

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teaches the archiving printer with a recording and knowing section, and Gasper teaches the method of invisible recording of information as well as a reading section for reading the invisible information.

Regarding claim 16, which depends from claim 15, Boswell teaches the embedding of the archive management information at the time of printing (column 16, lines 18-25).

Regarding claim 17, which depends from claim 15, Boswell teaches an apparatus which records the archive management information of the document at the time of printing (column 16, lines 34-40). Boswell does not teach an apparatus that prints the information in a state that is invisible to the human eye, the system of printing the information in a plurality of locations, nor does Boswell teach a reading section that includes an optical scanner. Gasper teaches system for recording information invisible to the naked eye (column 3, lines 51-56). Gasper also teaches a system for recording the archive management in a plurality of locations (column 6, lines 5-7). Gasper also teaches a reading section which includes an optical scanner used for reading at least part of the document (column 5, lines 32-38).

Boswell and Gasper are combinable because they are from a similar problem solving area of printing, archiving, and embedding information in a document. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to combine the method of recording invisible information and the method of using an optical scanner to scan the document as taught by Gasper with the archiving printer taught by Boswell. The motivation for doing so

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would have been to control when, where, and how print files are to be printed (Boswell, column 4, lines 26-28), as well as to maintain the high quality and utility of the document (Gasper, column 3, lines 59-62). Therefore, it would have been obvious to combine Gasper with Boswell to obtain the invention as specified in claim 16 and 17.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The Martin et al. reference, U.S. patent number 5,819,015, issued October 6, 1998, is cited for having a printer network with printers capable of storing print data and other files.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dillon J. Murphy whose telephone number is (571) 272-5945. The examiner can normally be reached on M-F, 8-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Moore can be reached on (571) 272-7437. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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